## **CLAIMS**

1. A method for protecting the stratified squamous epithelium of an individual against injury by a noxious substance comprising:

administering to the epithelium an effective amount of an agent comprising:

- a) at least one aromatic group;
- b) at least one  $-OSO_3R^4$  moiety, wherein  $R^4$  is H or a pharmaceutically acceptable cation; and
- c) at least one -NCS, -NCO, -NH(CO)-OR<sup>3</sup>, -NH(CS)SR<sup>3</sup>, -NH(C=NH)OR<sup>3</sup>, -NHCOCH<sub>2</sub>Cl, -NHCOCH<sub>2</sub>Br, -NHCO-CH=CH<sub>2</sub>, or -NHC(O)-CF<sub>3</sub> moiety.
- 2. The method of claim 1, wherein the at least one -OSO<sub>3</sub>R<sup>4</sup> moiety is non-annular to the aromatic group.
- 3. The method of claim 1, wherein the at least one aromatic group(s) is selected from the group consisting of phenyl, pyridyl, naphthyl, quinolyl and isoquinolyl.
  - 4. The method of claim 3, wherein the at least one aromatic group(s) is phenyl.
  - 5. The method of claim 1, wherein the agent comprises at least two aromatic groups.
  - 6. The method of claim 1, wherein the agent further comprises a C<sub>3</sub>-C<sub>8</sub> cycloalkyl.
- 7. The method according to claim 1, wherein the agent comprises at least one -NCS moiety.
- 8. The method according to claim 1, wherein said noxious substance is selected from the group consisting of gastric acid, HCl, N-acetylcysteine, acid-pepsin, and pepsin.
  - 9. The method according to claim 1, wherein the individual is mammal.

- 10. The method according to claim 9, wherein said agent is administered at a dosage of about 0.1-50 mg.
- 11. The method according to claim 9, wherein said agent is administered at a concentration of about 40 nM to about 4  $\mu$ M.
  - 12. The method according to claim 9, wherein the mammal is a human.
- 13. The method according to claim 9, wherein said mammal suffers from gastroesophageal reflux disease (GERD), heartburn, laryngitis, or pharyngitis.
- 14. The method according to claim 13, wherein said mammal suffers from gastroesophageal reflux disease (GERD).
- 15. The method according to claim 1, wherein the epithelium is selected from the group consisting of buccal, oropharyngeal, esophageal and laryngeal epithelium, rumen and forestomach.
- 16. The method according to claim 15, wherein the epithelium is esophageal epithelium.
- 17. The method according to claim 1, wherein said agent is administered by: perfusion via a tube onto the surface of stratified squamous epithelium; oral ingestion; gum; lozenge; mouth rinse; or aerosol spray.
- 18. A method for protecting stratified squamous epithelium against injury by a noxious substance comprising:

administering to the epithelium an effective amount of an agent of the formula:

$$X-Y$$
 $R^{1}_{(n)}$ 

wherein X is a linker selected from the group consisting of C<sub>1</sub>-C<sub>6</sub> alkylene, C<sub>2</sub>-C<sub>6</sub> alkynylene, or C<sub>3</sub>-C<sub>6</sub> alkynylene, wherein X may optionally include 1 or 2 oxygen atoms and/or 1 sulfur atom;

Y is a group pendant from X comprising at least one -OSO<sub>3</sub>R<sup>4</sup> moiety, wherein R<sup>4</sup> is H or a pharmaceutically acceptable cation;

n is an integer from 1-3; and

 $R^1$  and  $R^2$  are each independently selected from the group consisting of -H, a halogen with an atomic number from 9 to 53, hydroxy, -SO $_3$ R $^4$ , -OSO $_3$ R $^4$ , -NCS, -NCO, -NH(CO)-OR $^3$ , -NH(CS)SR $^3$ , -NH(C=NH)OR $^3$ , -NHCOCH $_2$ Cl, -NHCOCH $_2$ Br, -NHCO-CH=CH $_2$ , -NHC(O)-CF $_3$ , -S-CH $_2$ -CH=CH $_2$ , -NHCH $_2$ -C=CH, -NH-CH $_2$ -CN, -NH-S-CH $_2$ -CH=CH $_2$ , -O-CH $_2$ -CH=CH $_2$ , -NH-CF $_3$ , N-mono-, di-, tri-, tetra- and penta-haloethyl, -CN, -NH $_2$ , -NO $_2$ , -NHCOCH $_3$ , -CHO, -COOR $^4$ , -N $_3$ , -COR $^3$ , -R $^3$ OH, -R $^3$ NHCOCH $_3$ , -R $^3$ OSO $_3$ R $^4$ , -R $^3$ SO $_3$ R $^4$ , -OR $^3$ , -SR $^3$  and -R $^3$ , wherein R $^3$  is p-nitrophenyl, C1-C6 alkyl, C2-C6 alkenyl, or C2-C6 alkynyl, if at the distal end of the substituent, or C1-C6 alkylene, C2-C6 alkenylene, or C2-C6 alkynylene, if at the proximal end of the substituent, and wherein R $^4$  is H or a pharmaceutically acceptable cation.

- 19. The method of claim 18, wherein at least one of  $R_1$  and  $R_2$  is -NCS.
- 20. The method of claim 18, wherein X is -OCH $_2$  or -CH $_2$ O-.
- 21. The method of claim 18, wherein Y is  $C_1$  to  $C_4$  alkyl, to which is attached at least one  $-OSO_3R^4$  moiety.

- 22. The method of claim 18, wherein Y is a sulfonated polycarbinol chain of 1 to 6 sulfonated carbon atoms.
  - 23. The method of claim 18, wherein Y comprises at least two -OSO<sub>3</sub>R<sup>4</sup> moieties.
  - 24. The method of claim 18, wherein Y is ethyl-1,2-disulfate.
  - 25. The method of claim 18, wherein the agent is selected from the group consisting of:

acceptable salts thereof.

26. The method of claim 25, wherein the agent is

, or a pharmaceutically acceptable salt thereof.

27. The method of claim 25, wherein the agent is

, or a pharmaceutically acceptable salt thereof.

28. An agent which protects stratified squamous epithelium against injury by a noxious substance, and has the formula:

wherein: X is a linker selected from the group consisting of  $C_1$ - $C_6$  alkylene,  $C_2$ - $C_6$  alkenylene, or  $C_3$ - $C_6$  alkynylene, wherein X may optionally include 1 or 2 oxygen atoms and/or 1 sulfur atom;

Y is a group pendant from X comprising at least one -OSO<sub>3</sub>R<sup>4</sup> moiety, wherein R<sup>4</sup> is H or a pharmaceutically acceptable cation;

n is an integer from 1-3; and

 $R^1$  and  $R^2$  are each independently selected from the group consisting of -H, a halogen with an atomic number from 9 to 53, hydroxy, -SO<sub>3</sub>R<sup>4</sup>, -OSO<sub>3</sub>R<sup>4</sup>, -NCS, -NCO, -NH(CO)-OR<sup>3</sup>, -NH(CS)SR<sup>3</sup>, -NH(C=NH)OR<sup>3</sup>, -NHCOCH<sub>2</sub>Cl, -NHCOCH<sub>2</sub>Br, -NHCO-CH=CH<sub>2</sub>, -NHC(O)-CF<sub>3</sub>, -S-CH<sub>2</sub>-CH=CH<sub>2</sub>, -NHCH<sub>2</sub>-C=CH, -NH-CH<sub>2</sub>-CN, -NH-S-CH<sub>2</sub>-CH=CH<sub>2</sub>, -O-CH<sub>2</sub>-CH=CH<sub>2</sub>, -NH-CF<sub>3</sub>, N-mono-, di-, tri-, tetra- and penta-haloethyl, -CN, -NH<sub>2</sub>, -NO<sub>2</sub>, -NHCOCH<sub>3</sub>, -CHO, -COOR<sup>4</sup>, -N<sub>3</sub>, -COR<sup>3</sup>, -R<sup>3</sup>OH, -R<sup>3</sup>NHCOCH<sub>3</sub>, -R<sup>3</sup>OSO<sub>3</sub>R<sup>4</sup>, -R<sup>3</sup>SO<sub>3</sub>R<sup>4</sup>, -OR<sup>3</sup>, -SR<sup>3</sup> and -R<sup>3</sup>, wherein R<sup>3</sup> is p-nitrophenyl, C<sub>1</sub>-C<sub>6</sub> alkyl, C<sub>2</sub>-C<sub>6</sub> alkenyl, or C<sub>2</sub>-C<sub>6</sub> alkynyl, if at the distal end of the substituent, or C<sub>1</sub>-C<sub>6</sub> alkylene, C<sub>2</sub>-C<sub>6</sub> alkenylene, or C<sub>2</sub>-C<sub>6</sub> alkynylene, if at the proximal end of the substituent, and wherein R<sup>4</sup> is H or a pharmaceutically acceptable cation.

- 29. The agent of claim 28, wherein at least one of  $R_1$  and  $R_2$  is -NCS.
- 30. The agent of claim 28, wherein X is -OCH<sub>2</sub>- or -CH<sub>2</sub>O-.
- 31. The agent of claim 28, wherein Y is  $C_1$  to  $C_4$  alkyl, to which is attached at least one  $-OSO_3R^4$  moiety.
- 32. The agent of claim 28, wherein Y is a sulfonated polycarbinol chain of 1 to 6 sulfonated carbon atoms.
  - 33. The agent of claim 28, wherein Y comprises at least two -OSO<sub>3</sub>R<sup>4</sup> moieties.
  - 34. The agent of claim 28, wherein Y is ethyl-1,2-disulfate.
  - 35. The agent of claim 28, wherein the agent is selected from the group consisting of:

acceptable salts thereof.

36. The agent of claim 35, wherein the agent is

, or a pharmaceutically acceptable salt thereof.

37. The agent of claim 35, wherein the agent is

, or a pharmaceutically acceptable salt thereof.

- 38. A composition comprising an agent according to claim 28 and a pharmaceutically acceptable excipient.
- 39. A composition comprising an agent according to claim 28 and a proton pump inhibitor.
- 40. A kit for treating an individual who suffers from or is susceptible to gastroesphageal reflux disease (GERD), heartburn, laryngitis, or pharyngitis comprising:
- a) a container comprising an effective amount of an agent according to claim 28; and
  - b) instructions for use.